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August 6, 2004

Allen Kemplen, Area Planner
Central Region Planning
P.O. Box 196900
Anchorage, Alaska 99519-6900

HAND DELIVERED

Re: Comments on Draft Revision to Southwest Alaska Transportation Plan and Draft Technical Memorandum

Dear Mr. Kemplen:

My clients have again hired Dr. John Duffield, one of the nation's most respected natural resource economists, to review the above documents. He is a co-author of a legal treatise on natural resource damages and economics. He has substantial experience in Alaska on recreational and subsistence economics, knows southwest Alaska well, and has been involved in natural resource related litigation in Alaska and elsewhere.

His comments on behalf of my clients are attached.

Also, on one detail that arose in the public meeting on these documents – i.e., the allegation of a recent downing -- since that meeting, I discussed with the president of Kijik Corporation the drowning that was claimed at the meeting to have occurred in the past few years. She told me that it occurred to a man who was fishing in the lake rather than trying to cross to Iliamna.

Sincerely,

Geoffrey Y. Parker

Attachment

August 5, 2004

Mr. Geoffrey Y. Parker
730 I Street, Suite 226
Anchorage, Alaska 99501

Dear Mr. Parker,

You asked me to comment on two documents recently released for public comment by the Alaska Department of Transportation and Public Facilities: Southwest Alaska Transportation Plan, Draft Revision (June 2004) and Technical Memorandum on Revised Cost and Effectiveness Measures (June 2004).

My comments are attached in the document entitled: "Comments of Dr. John W. Duffield on the Southwest Alaska Transportation Plan", dated August 5, 2004.

Thanks for involving me in this issue.

Sincerely,

John W. Duffield

Comments of Dr. John W. Duffield on the Southwest Alaska Transportation Plan

August 5, 2004

Introduction

1. These comments are being provided to Alaska Department of Transportation and Public Facilities (ADOT&PF) on behalf of Alaska State Council of Trout Unlimited and Robert B. Gillam. The latter are plaintiffs in a suit filed against ADOT&PF concerning a proposed road and bridge project between the communities of Iliamna/Newhalen and Nondalton in Southwest Alaska.

2. The focus of the comments is on the economic evaluation of the proposed project in two documents recently released by ADOT&PF for public review: Southwest Alaska Transportation Plan, Draft Revision (June 2004) and Technical Memorandum on Revised Cost and Effectiveness Measures (June 2004).

3. As part of this evaluation, an earlier ADOT&PF document, Nondalton-Newhalen/Iliamna Pioneer Road Economic Feasibility Study (March 1986), was also reviewed. This 1986 document has been identified by a recent court order (Superior Court for the State of Alaska, Third Judicial District at Anchorage, Case No. 3AN-02-09363 Cl, January 5, 2004) as "..the State's last cost and effectiveness analysis undertaken for this particular project" (Id at 12). The order further states: "..in this court's view, AS 44.42.050 does require a project's economic cost must be considered as a factor in the determination of whether a particular project should proceed, together with consideration of 'the costs and benefits of new transportation modes and facilities'". The court ordered ADOT&PF to cease action to construct the Iliamna-Nondalton road and bridge project until the economic costs of the project are considered in the next revision of the Southwest Regional Transportation Plan as required by AS 44.42.050. The court also stated that "ADOT&PF must also consider the benefits of this component of the project". (Id at 14).

4. The purpose of these notes is to provide comment on whether the June 2004 documents identified at point 2 could be said, from a professional economic viewpoint, to adequately consider the costs and benefits of the proposed project.

5. The commentor is a PhD. economist (Yale, 1974) specializing in natural resource economics, and has over 30 years experience as a Professor and Research Professor at the University of Montana. He is a coauthor, along with Kevin Ward, of Natural Resource Damages: Law and Economics (New York: John Wiley, 1992). He has worked in Alaska on a number of projects including: expert testimony in the Exxon Valdez oil spill case on subsistence and recreation impacts, National Academy of Sciences panelist and co-author (Wolves, Bears and Their Prey in Alaska: Biological and Social Challenges in Wildlife Management (Washington, D.C.: National Academy Press, 1997), as well as conducting original data collection, analysis and peer-reviewed publications for Alaska Department of Fish and Game on Alaska sport fisheries.

Summary Comments

6. The 1986 ADOT&PF study provides a benefit-cost analysis of the proposed project, with a basic finding that the costs far exceeded the benefits at that time (benefit-cost ratio of 0.26). The Deputy Commissioner for the Central Region summarized the findings as: "The benefit/cost analysis contained in this study concludes that the construction of the road is not economically justified at this time as the cost far exceeds the benefits. The benefit cost ratio ($3,363,822/$12,828,312) for the project equals .26." (cover letter) The ADOT&PF Commissioner, R.J. Knapp, signed the cover letter to indicate concurrence (April 29, 1986).

7. The current study does not specifically provide a benefit/cost ratio estimate, but is instead presented as a "cost-effectiveness" analysis. The two studies (1986 and 2004) are contrasted here, in these comments, with regard to methods and assumptions in Table 1. Nonetheless, the 2004 study in attempting to consider costs and benefits, does provide data indicating a benefit-cost estimate quite similar to that for 1986: a ratio of 0.31. This is shown in Table 2 and takes the ADOT&PF estimates at face value. The implication of this finding is that should the same standards be applied as were applied in 1986 as the basis for what is "economically justified", the 2004 version of the proposed Iliamna-Nondalton project is not economically justified.

8. This conclusion is further supported by additions to the 2004 analysis to more closely match the methods and assumptions used in the1986 study (which apparently, based on the January 2004 court order, can be judged to satisfy AS 44.42.050). These findings are summarized in Table 3, and reveal again (for a stand-alone project) a very low benefit-cost ratio of 0.37.

9. The project is also considered in other contexts, including as part of the larger proposed Cook Inlet to Bristol Bay Corridor (also discussed in the 2004 DOT&PF document). In this context the 2004 findings on their face indicate an even lower benefit-cost of 0.08, or, if revised to approximate the 1986 study methods, a benefit-cost of 0.31.

10. Some mathematical, economic, and statistical errors in both the 1986 and 2004 studies are also noted below, and corrections to several of these are provided. Just incorporating corrections to the mathematical errors in the 1986 ADOT&PF study leads to a somewhat lower estimated benefit-cost ratio (0.22, shown in Table 2 of these comments). The major methodological error in the 2004 ADOK&PF draft documents is in the choice and estimation of the variable to estimate "effectiveness" which is simply trips per year. Under evaluation in the 2004 Technical Memorandum on Revised Cost and Effectiveness Measures (at p.4-6) "evaluation methodology" is discussed. After listing five goals ranging from health and safety, to need, to efficiency, to improved service, to adaptability and flexibility, to protecting economic and subsistence resources, the document states that: "...a measure was chosen that reflects the success of the proposed project by its use - estimated 2000 person trips on the facility". There are two major problems with this choice. First the measure is negatively correlated with some of the goals, as discussed below, in particular protection of economic and subsistence resources and safety. (Parenthetically, the project as proposed is also at odds with transportation efficiency, both on the grounds of benefit-cost findings considerably below one.) Accordingly, simply demonstrating

that trips might increase due to the project is not equivalent to showing that the project contributes to goals. As discussed below, the project actually likely reduces attainment of the regions goals regarding protection of economic and subsistence resources and public safety. The second major problem is that the study does not provide a reliable estimate of the number of trips the Iliamna-Nondalton project specifically will provide. A model is presented in the ADOT&PF Travel Demand Forecasts Technical Memorandum (1998) at pp 16-17. Use of this model with the high forecast for population at Iliamna and Nondalton generates an estimate of travel demand for the project of 98,536 - and is apparently the basis for the 99,000 trips per year used in the 2004 ADOT&PF projection for the Iliamna-Nondalton segment. The problem is that the model is estimated on only three data points (actual travel at Dillingham-Alegnagik, King Salmon-Naknek, and Kodiak-Womens Bay). For this small a data set and two parameter points, the statistical significance of the estimated parameters is very low. When the model was estimated by this commenter and his colleagues, it was found that the 95 percent prediction interval for the model for the Ilimana-Nondalton application actually includes zero. (The actual estimated 95% confidence interval for the mean is about minus 165,000 to plus 368,000.) In other words, one can not be confident from this model that there will be any additional trips created by the project. This considerable uncertainty in the ADOT&PF travel demand forecasts is further illustrated by the fact that an entirely different model is provided in "Appendix H. Demand Estimate Methodologies". This model is a variant on the earlier model, but now includes distance (as the model is overspecified and guaranteed to fit the data exactly, it can not be evaluated statistically). This model appears to be the basis of some of the travel demand estimates in the 2004 draft documents, but provides a very different estimate for the Iliamna-Nondalton segment than the 2004 documents report (47,635, or about half of the 99,000 trips estimate). One can also note that the 1986 ADOT&PF study cited above uses a different methodology, which is based on actual travel in the Iliamna-Nondalton area, and estimates about 14,000 trips per year. This uncertainty on actual travel demand for this project makes the reported estimates of "cost-effectiveness" meaningless. In other words, dividing a cost estimate by a number that may well actually be zero, does not provide a reliable estimate of anything.

11. A limitation of both the 1986 and 2004 studies is that several major categories of impacts are not considered. Some of these potential categories are listed in the 1986 study as part of an outline of what a more complete benefit-cost analysis might entail. A review of this outline, and another DOT&PF document (Iliamna-Nondalton Road Improvements, Revised Environmental Assessment and Finding of No Significant Impact (December 2001)) suggest several categories of impacts that may in fact be quite significant for the Iliamna-Nondalton project (as well as the larger Cook Inlet to Bristol Bay Corridor).

12. The primary economic base for the Iliamna, Nondalton, and Newhalen areas is commercial fishing (in Bristol Bay), subsistence activities, and tourism (particularly lodge-based sport fishing). There are potentially significant impacts to both of these latter activities (subsistence and recreation) from the proposed project. A preliminary estimate of the potential impact of the proposed projects on recreational fishing and subsistence harvests indicate negative impacts on the order of $1 million to $10 million in annual foregone benefits, respectively, as discussed below. These findings further depress the benefit/cost ratio and support the conclusion that the project is not economically justified. The losses would be much larger for the full Cook Inlet to

Bristol Bay project.
13. An additional quantifiable and potentially significant cost item is morbidity, mortality and property losses due to accidents that will occur with the development of this road. The second significant point made in the Environmental Assessment (2001) cited above is with regard to comparison of safety across transportation modes: "Alaska occupational fatality rate for commercial pilots (271 per 100,000) is approximately twice as high as for professional motorized drivers (130 per 100,000) ...the likelihood of potentially serious injuries and accidental deaths resulting from air travel between Iliamna and Nondalton needs to be reduced" (at p.1). However, the appropriate comparison here is not commercial pilots and professional drivers, but between commercial pilots using this air corridor (not all are commercial air routes) and nonprofessional drivers, including ATV's and a mix including younger drivers. The ADOT&PF study lacks a careful quantitative analysis of the likely impacts of the project on the costs of accidents (property damage, morbidity and mortality).

14. A Consumer Product Safety Commission document (#540, "CPSC Urges Caution for Three- and Four-Wheeled All-Terrain Vehicles) states that: "The average risk of injury from ATV riding is high. Over its estimated seven-year life, the average ATV has a one-in-three chance of being involved in an accident resulting in injury." A related issue is the association of alcohol use with increased access and its interaction with injury death. For example, a Journal of the American Medical Association article ("Alcohol-Related Injury Death and Alcohol Availability in Remote Alaska", JAMA, December 3, 1997 (278(21)) states that injury is a major public health problem in Alaska, and alcohol consumption and injury death are associated. This a significant issue that can not be dismissed with simple comparisons of commercial pilot and professional vehicle driver accident rates. There is a substantial literature that provides economic parameters such as the value of a statistical life for this type of benefit-cost analysis (for example, see Chapter 10, "Valuing Longevity and Health" in A. Myrick Freeman III, The Measurement of Environmental and Resource Values,Washington, D.C.: Resources for the Future (1993)).

15. In addition to costs within the benefit-cost accounting framework, there are potentially significant impacts on the regional economy. From the standpoint of income (and real, in-kind equivalents) and expenditures, both subsistence users and lodge and guiding owners, based on the existing record, would suffer significant losses due to the road projects proposed in the Southwest Alaska Transportation Plan.

16. The impact of road access on subsistence harvests in Alaska is well documented (e.g. Robert J. Wolfe and Robert J. Walker, "Subsistence Economies in Alaska: Productivity, Geography, and Development Impacts", Arctic Anthropology 24(2):56-81 (1987)). Wolfe and Walker estimate, based on a sample of 98 Alaska communities (including Iliamna, Newhalen and Nondalton), that a major factor explaining differences in subsistence across communities is roads. They conclude: "The presence of roads is significantly associated with reduced subsistence productivity. Harvests of communities along roads or marine highway systems are 69% less than harvests by communities off the road network (171 lbs compared to 559 lbs per capita.." (at p. 66 and their Table 5).

17. The annual estimates of pounds per person of subsistence harvest from the Wolfe and Walker

data base show the following levels for the immediate project-area communities: Iliamna - 416 lbs, Newhalen - 767 lbs, and Nondalton 976 lbs. It is noteworty that levels of harvest in the more-accessible community of Iliamna are less than half of those for Nondalton. Wolfe and Walker explain some of the factors associated with roads that lead to major negative impacts on subsistence users: settlement entry by non-Natives along roads and increased competion between rural and urban users.(Id at p.69).

18. An awareness of the negative impacts of road development on subsistence communities and fisheries is also indicated by the Bristol Bay Coastal Resource Service Area's "Bristol Bay CRSA Coastal Management Plan 2/17/87". Under the topic of "Transportation", the plan (at 4-4), states "Whatever future transportation requirements are required, residents strongly oppose a road connection to other regions of the state."This statement clearly implies opposition to the Cook Inlet-Bristol Bay corridor project. The cited document is available on line at the following address: www.alaskacoast.state.ak.us/Explore/nwbbersa.htm under "Titles of Coastal District Plans, Effective Dates, and links to Enforceable Policy".

19. Relative values for foregone Alaska subsistence harvest benefits have been estimated in the peer-reviewed literature and in the context of litigation (John W. Duffield, "Nonmarket valuation and the courts: the case of the Exxon Valdez", 25 Contemporary Economic Policy (October, 1997): 98-110). For example, the Alaska Native class settlement in the Exxon Valdez litigation was based on a replacement cost value per pound of subsistence harvest (1994 dollars) of about $13 per pound. A fully compensatory value based on the Wolfe and Walker data base, and Alaska Native choices between income earning opportunities and subsistence harvest, reveals a value of about $38/pound of harvest (Id at p.109 and Table 4).

19. As an example of the significant impacts of the Iliamna-Nondalton project and the larger Cook Inlet-Bristol Bay project, suppose that with increased access the subsistence harvest in Nondalton and Newhalen fell to the same level as in Iliamna (and using DOT&PF (2004) population projections for 2020). This would imply a subsistence harvest loss of about 560 pounds and 351 pounds per capita, respectively or a total of 265,530 pounds per year. (These specific losses are similar to the average loss of 388 pounds due to road access in the Wolfe and Walker (op. cit.) data. Using a range of economic values (point 19 above), this would imply an annual loss of $3.5 million dollars to $10 million dollars a year in in-kind values. This cost is significant relative to the estimated benefits associated with the Iliamna-Nondalton project and have not been quantified in ADOT&PF's current draft documents.

20. A sports fishery likely to be impacted by the proposed project is the Newhalen River, which would be spanned by the proposed bridge. The bridge and road will provide increased access for this high quality fishery. Alaska Fish and Game ("Participation, Catch and Harvest in Alaska Sport Fisheries During 2000", Fishery Data Series No. 03-05, Alaska Department of Fish and Game, Division of Sport Fish (April 2003) estimates that 1,278 anglers took 1980 sportfishing trips to the Newhalen in the year 2000.

21. Nonmarket economic valuation studies of Alaskan anglers show that road-access fisheries may be valued somewhat less on average than travel to more remote fisheries. For example,

fishing trips to road-accessible fisheries in the Fairbanks area were valued at between $34 and $69 per trip in 1995 compared to $591 for all nonresident trips in Region III and $192 for trips to this area by anglers from Southcentral and Southeast Alaska. (J.W. Duffield, M.F. Merritt, and C.J. Neher, "Valuation and Policy in Alaskan Sport Fisheries", in Tony J. Pitcher and Charles Hollingworth, eds., Recreational Fisheries: Ecological, Economic and Social Evaluation, Oxford: Blackwell Science (2002)). The weighted average differential between all ADF&G Region III trips and the Fairbanks road-accessible trips ($380 per trip) can be used to crudely illustrate a possible bound to road-access impacts on the Newhalen sports fishery. Assuming one-half of all trips might be impacted to this extent, the loss in angler benefits would be on the order of $350,000 per year.

22. In the context of the larger Cook Inlet-Bristol Bay road project, all of the major Bristol Bay sports fishing drainages would be impacted: the Lake Iliamna-Kvichak drainage, the Naknek drainage, and the Nushagak-Mulchatna drainage, which supported a total of 58,890 angler trips per year in 2000 (Participation, Catch and Harvest in Alaska Sport Fisheries During 2000, AF&G (2003)). In terms of economic production and economic value, these trips are more highly valued than trips to competing areas, such as the Kenai and Russian River, and the West Susitna/West Cook Inlet Fisheries, based on the significant price differential at full-service lodges across these areas (Attachment 1).

23. Attachment 1 provides a listing of a data set from a sample of Alaska sport fishing lodges for three areas: Bristol Bay, the Kenai River and Russian River area on the Kenai Pennisula, and the West Susitna-Cook Inlet drainages. ADF&G in its Sport Fish Division maintains a list of full-service lodges by region; all lodges listed under the Bristol Bay communities of Iliamna, Nondalton, Newhalen, Pedro Bay, Iguigik, King Salmon, and Dillingham were search on the web to identify prices and services. All lodges listed under the towns of Kenai, Soldotna, Sterling, and Coopers Landing were the initial list for the Kenai area, and West Susitna-Cook Inlet lodges were identified by physical location for the following fisheries: Alexander Creek, Deshka, Fish Creek, Yentna R., Lake Creek, and the Talachulitna R. The Kenai fisheries are all road accessible, while the Bristol Bay and West Sustina-Cook Inlet fisheries are accessible only by air and boat. The data were investigated to identify price differences between the regions. Mean prices per week for lodges advertising week-long packages for Bristol Bay, W. Susitna/W. Cook Inlet, and Kenai, respectively are: $5,074 (n=18), $3,732 (n=8) and $1,901 (n=14) in the total sample of 40 lodges offering seven day trips, listed in these areas, and advertising on the web. Bristol Bay prices are about $1300 on average higher than W. Susitna and about $3100 higher on average than the road-accessible Kenai R. fisheries. Regression analysis in Attachment 1 indicates that the price difference between Bristol Bay and W. Susitna fisheries (neither are road accessible) appears to be largely due to the number of days in the week package when daily flyout services are provided (included in the week-long package prices). None of the Kenai lodges offer daily flyout for the entire week, only one lodge does in the W. Susitna sample, and 10 or 18 (or 56%) of Bristol Bay lodges do.

24. Mean per day values for a sample of 51 lodges reported in Attachment 1, are: Bristol Bay $673, W. Susitna/W. Cook Inlet $488, and Kenai $272. These per day estimates also indicate a much higher level of average prices in Bristol Bay. The 2004 estimate of $673 per day at

sportfishing lodges in Bristol Bay can be compared to an estimate for 1986, based on a study by David Ackley. "An Economic Evaluation of Recreational Fishing in Bristol Bay, Alaska", MA Thesis, University of Alaska, May 1988). Ackley surveyed lodges in the Kvichak-Lake Iliamna area and in the Naknek drainage. Based on complete survey information for 23 lodges, he estimated per day client average cost at $342 (Id. at p.106). Using the Consumer Price Index to update this to current dollars (CPI-U 1986 is 109.6, June 2004 is 189.7) results in a 1986 lodge per day cost estimate (in 2004 dollars) of $592 per day. The actual 2004 estimate of $673 is somewhat higher, but much of the difference in the two estimates is likely due to general price inflation.

25. The fisheries in the Bristol Bay drainages are unique for being wilderness rivers that offer uncrowded fishing for very large wild indigenous rainbow trout. Additionally, the area is sufficiently large that the ultimate in daily angler access and choice (daily flyout to specific fisheries depending on what fisheries offer the best success for the target species on that day) is the level of service offered at many lodges in the area. All five species of salmon are also present in abundance at different times and locations in Southwest Alaska. The significance of the rainbow trout fishery is that it is highly sensitive to fishing pressure, in part because of the length of time for rainbows to reach trophy size in this environment, and in part because their numbers are relatively limited, even in the very best fisheries. This theme is echoed in the advertisement of the Bristol Bay fly-out wilderness lodges, which focus more heavily on lack of crowding, wilderness, and trophy rainbow fisheries, than other fisheries across the state (based on web sites for the lodges listed in Attachment 1).

26. Ackley's (1988) study also surveyed lodges as to the the preferred target species for Bristol Bay anglers. He found that "The rainbow trout was by far the most targeted species by anglers as perceived by lodge owners." (Id. at p. 95).

27. Because the average trip to a Bristol Bay fly-in fishing lodge is relatively expensive (on the order of $6000 per week per individual for full daily fly-out/guided service compared to W. Susitna/W. Cook Inlet and the Kenai (Attachment 1), these remote wilderness fisheries are highly productive in the sense of economic activity generated per angler. For example, tourism (primarily angler) expenditures for guide, lodge, and air taxi industries in the non-road accessible Nushagak-Mulchatna drainage were estimated at $25 million in 1986 for a client population estimated at between 9,900 and 18,200 clients (90 percent confidence interval)(Jon Isaacs & Associates, 1986, Commercial Recreation Services Providers Study, Bristol Bay Coastal Resource Service Area (at p. 55).

28. Ackley (1988) developed an estimate of total sport fishing-related expenditure for the Kvichak and Naknek drainages in 1986 of $45 million including nonresident expenditure of $40.9 million including: $9.6 million on air travel, $28 million on lodges, and $6.9 million on other (including equipment, food, etc.). Resident expenditure on all items totaled $4.0 million. Ackley estimated that 6890 nonresidents and 2266 resident anglers fished in his study area in 1986 (75% nonresident) or a total of 9156 anglers.

29. Totaling the estimates for the Nushagak drainage ($25 million) and the Kvichak-Naknek ($45

million) for 1986 indicates a total of $70 million in primarily sport fishing recreational expenditure in these Bristol Bay drainages. By contrast, 330,000 angler trips to the relatively crowded Kenai and Russian Rivers in 1987 were estimated to generate a much lower amount, $43 million in expenditures (Jones & Stokes, 1987, Southcentral Alaska Sport Fishing Economic Study). (Parenthetically the Kenai study used a broader definition of expenditures, including retail spending, grocery stores, gas, etc.)

30. The wilderness fly-out fishing industry in Bristol Bay in some ways parallels and is far more compatible with the other major economic activities in that region(subsistence and commercial fisheries) than the much more crowded road-accessible fisheries.

31. The empirical economic comparison of the Nushagak and Kenai River fisheries suggest that road access, particularly for the larger Cook Inlet-Bristol Bay project, could significantly impact these currently remote, uncrowded wilderness fisheries.

32. There is also an important theoretical economics literature that long ago identified open access (public) fisheries as a classic common property (e.g. "tragedy of the commons") problem . In a recent paper (S. Cox and C. Walters, "Maintaining Quality in Recreational Fisheries: How Success Breeds Failure in Management of Open-Access Sport Fisheries", pp 107-119, in Pilcher and Hollingworth, op cit.), the authors unequivocally state that: "Where recreational fisheries are open to public access, there is a basic pathology in which success breeds failure: development of a quality fishing situation leads to increased fishing effort until quality is reduced to be no better than other situations with comparable costs and difficulties of access....high quality fishing is found only where fishing effort is severely restricted. There are three situations where high quality/low fishing effort occurs: 1) high cost/time required to access the fishery such as very remote lakes and ocean coastal areas far from major tourist routes, 2) control of access by private or local interests, such as guiding camps, fishing clubs, and lakeshore owners, and 3) an equitable strategy of limited access via a lottery system, as has been used routinely in big game management for decades." (at 107). The Bristol Bay fly-out wilderness fisheries are protected primarily by access restrictions of the first type; road access would change this, possibly to the significant detriment of commerce.

33. The Alaska Department of Fish and Game has for many years had in place a sport fish trophy management program for selected areas within the Kvichak and Nushagak drainages. The restrictions on bag limit developed in these regulations were adopted by the Alaska Board of Fish and Game and only apply to rainbow trout, and include use of single hook terminal tackle. A memorandum dated January 16, 1969 from the Regional Reseach Supervisor at the Division of Sport Fish stated: "The Board, in its actions to set aside areas for trophy sport fishing, was motivated by the desire to maintain the present high levels of large rainbow trout. Trophy sized rainbows from 10 to 15 pounds require 8 to 12 years or more to attain their large size. The Board noted that angler interest and angler harvest rates had substantially increased in the Bristol Bay drainages in recent years. Many sport fishermen rate the streams in the Kvichak and Nushagak watersheds as the last outposts of relative unexploited freshwater sport fisheries remaining in

North America." (Memorandum, from Rupe E. Andrews to Amos Berg, dated January 16, 1969, Alaska Department of Fish and Game, subject: "Alaska Board of Fish and Game Designates First Sport Fish Trophy-Management Areas in State")

34. Management actions related to trophy rainbow management actions, angler preferences for lack of crowding and high catch per unit effort, and relatively high prices compared to other areas all point to a unique fishery in the Iliamna-Nondalton road and bridge and Cook Inlet-Bristol Bay corridor. This sport fishery is a major part of the regional economy, and is in fact substantially larger in terms of economic impact than the Bristol Bay commercial salmon fisheries. Because of the nature of open access fisheries, and the particular vulnerability of this sport fishery to crowding and damage to the limited biological resource (trophy rainbows), the proposed road projects will have a significant impact on this resource.

35. Existing economic methods and data, as cited in the sport fishing studies listed above, are available for ADOT&PF to evaluate the actual economic impact of the proposed projects on Bristol Bay fisheries.

Attachment 1. Alaska 2004 Sportfishing Lodge Data Sets and Price Regression Analysis

Regression Results and figures (Patterson2.doc (37KB))
Subset of data with lodges offering 7-day package (Lodge7day2.xls (22KB))
Data set for all lodges in the sample (LodgeAll2.xls (36KB))

Table 1. Comparison Alaska DOT and PF
Economic Evaluation (1986, 2004) of
Iliamna-Nondalton Road/Bridge Project: Methods and Assumptions

Item	**1986**[1]	**2004**[2]
Method	Benefit-Cost	Cost Effectiveness
Criteria	B/C ratio	"net annual costs" "net annual costs per person trip"
Design-life	20 year	20 year
Discount rate	10%	7%
Projected trips/year	14,235	75,300
Costs Included:		—
Construction	9,000,000	12,520,000
Annual O&M	192,000	225,450
User Costs	at $0.95/mile	—
Benefit Included:		
Cost of consumer goods	$50 times tri-city population	—
Freight savings	—	freight rate differentials
User savings	user costs compared to unit cost ($50)	—
Employment benefits	3 maintenance workers @ $56,000/year	—

[1] Source: Nondalton-Newhalen/Iliamna Pioneer Road Economic Feasibility Study (March, 1986), Alaska Department of Transportation and Public Facilities.
[2] Source: SW Alaska Transportation Plan, Draft Revision, ADOT & PF (June, 2004) at footnote 16 and Table 12. Technical Memorandum on Revised Cost Effectiveness Measure, ADOT&PF (June 2004) at Table 10.

Table 2. Comparison AK DOT and PF
Economic Evaluation (1986, 2004) of
Iliamna-Nondalton Road/Bridge Project: Findings

Item	**1986**[1]	**2004**[2]
	(Annual study-year dollars)	
Costs		
Construction	1,057,082	1,181,810
O&M	192,000	225,450
User costs	515,298[3]	—
Subtotal	1,764,380	1,407,260
Benefits		
Freight/goods	30,650	435,400
User savings	196,443	—
Employment benefit	168,000	—
Subtotal	395,093	435,400
Criteria		
Benefits-cost ratio	0.22	0.31
Net annual cost	1,369,287	971,860
Cost-effectiveness	80.02	12.91

[1] Source: Nondalton-Newhalen/Iliamna Pioneer Road Economic Feasibility Study (March, 1986), Alaska Department of Transportation and Public Facilities.
[2] Source: SW Alaska Transportation Plan, Draft Revision, ADOT & PF (June, 2004) at footnote 16 and Table 12. Technical Memorandum on Revised Cost Effectiveness Measure, ADOT&PF (June 2004) at Table 10.
[3] Corrected error in original of using one-way mileage per trip.

Table 3. 2004 Study
Revised to Include Cost and Benefit Categories
of 1986 Study

Item	2004 (annual study year dollars)
Costs	
Construction	1,181,810
O&M	225,450
User costs[1]	2,746,944
Subtotal	4,154,204
Benefits	
Freight	435,400
User savings[2]	1,039,140
Employment benefits	56,000
Subtotal	1,530,540
Criteria	
Benefit-cost	0.37
Net annual cost	2,623,664
Cost-effectiveness	$34.84

[1] At 1986 rate of $0.95/mile times 75,300 trips/year times 38.4 miles/trip
[2] At ($50-36.20) times 75,300.

Table 4. 2004 Estimates
for Iliamna-Nondalton in
Context of Cook Inlet to Bristol Bay Corridor

Item	2004[1]	2004/1986 Methods
Costs		
Construction	1,181,810	1,181,810
O&M	225,450	225,450
User costs[2]	—	3,622,464
Subtotal	1,407,260	5,029,724
Benefits		
Freight	115,800	115,800
User savings[3]	—	1,370,340
Employment benefits	—	56,000
Subtotal	115,800	1,542,140
Criteria		
Benefits-cost	0.08	0.31
Net annual cost	1,291,460	3,487,584
Cost-effectiveness	13.01	$35.12

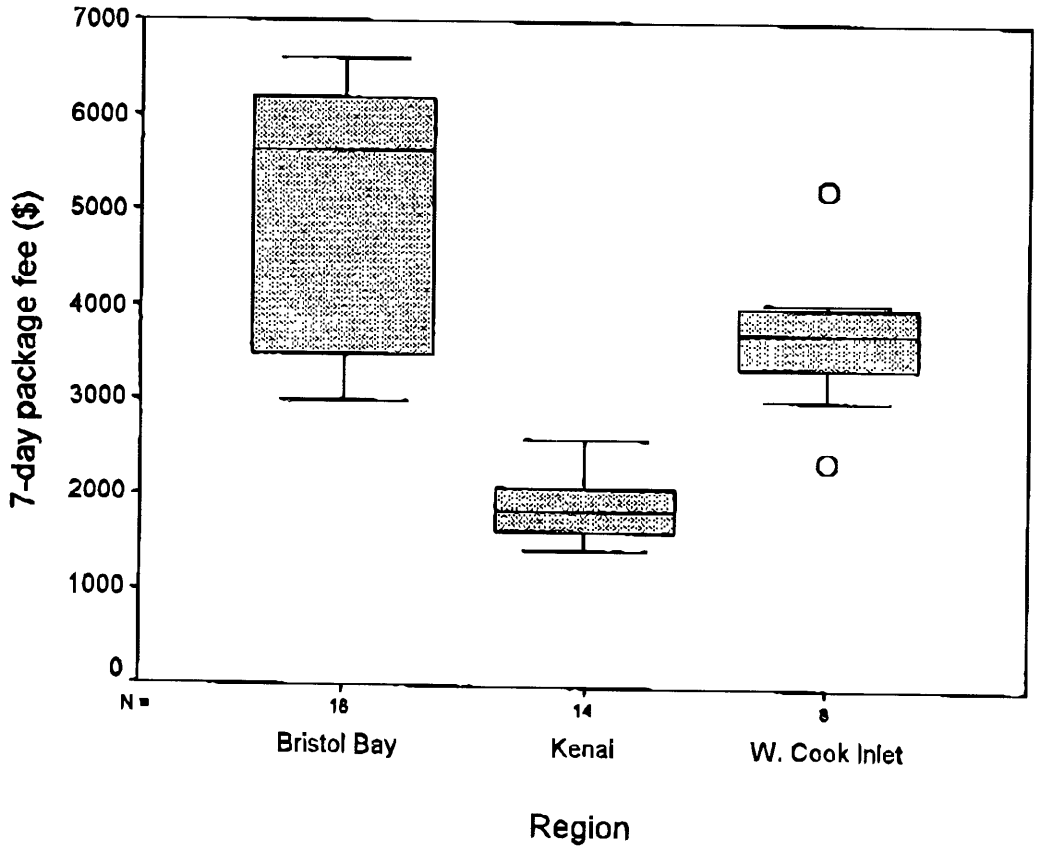
[1] Source: SW Alaska Transportation Plan, Draft Revision, ADOT & PF (June, 2004) at footnote 16 and Table 12. Technical Memorandum on Revised Cost Effectiveness Measure, ADOT&PF (June 2004) at Table 10.
[2] Assume 99,300 trips times $0.95/mile and 38.4 miles
[3] At ($50-36.20) times 99,300

Attachment 1. Alaska 2004 Sportfishing Lodge Data Sets and Price Regression Analysis

Regression Results and figures (Patterson2.doc (37KB))
Subset of data with lodges offering 7-day package (Lodge7day2.xls (22KB))
Data set for all lodges in the sample (LodgeAll2.xls (36KB))

1. Lodges offering 7-day packages

Comparison of package prices for lodges offering 7-day packages



Report

7-day package fee ($)

Region	N	Mean	Median	Std. Deviation	Minimum	Maximum
Bristol Bay	18	$5,074	$5,625	$1,249	$3,000	$6,600
Kenai	14	$1,901	$1,847	$347	$1,450	$2,600
W. Cook Inlet	8	$3,732	$3,736	$823	$2,395	$5,250
Total	40	$3,695	$3,500	$1,696	$1,450	$6,600

Regression of 7-day package fee on various attributes for lodges with 7-day packages (R^2=.935). Reference region is Bristol Bay.

Coefficients[a]

						95% Confidence Interval	
		Coefficient	Std. Error	t	P-value	Lower Bound	Upper Bound
	(Constant)	3417.4	174.0	19.64	.000	3064.6	3770.3
	Flyout days	420.0	35.7	11.77	.000	347.6	492.4
	Kenai	-1666.6	200.7	-8.30	.000	-2073.6	-1259.5
	W. Cook Inlet	-.9	216.7	.00	.997	-440.5	438.6

a. Dependent Variable: 7-day package fee ($)

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	105358126	3	35119375.25	186.695	.000[a]
	Residual	6771992.16	36	188110.893		
	Total	112130118	39			

a. Predictors: (Constant), W. Cook Inlet, Flyout days, Kenai

b. Dependent Variable: 7-day package fee ($)

Transport included by region for lodges with 7-day packages

Region * Transport Included Crosstabulation

			Transport included		
			0	1	Total
Region	Bristol Bay	Count		17	17
		% within Region		100.0%	100.0%
	Kenai	Count	12	1	13
		% within Region	92.3%	7.7%	100.0%
	W. Cook Inlet	Count		8	8
		% within Region		100.0%	100.0%
Total		Count	12	26	38
		% within Region	31.6%	68.4%	100.0%

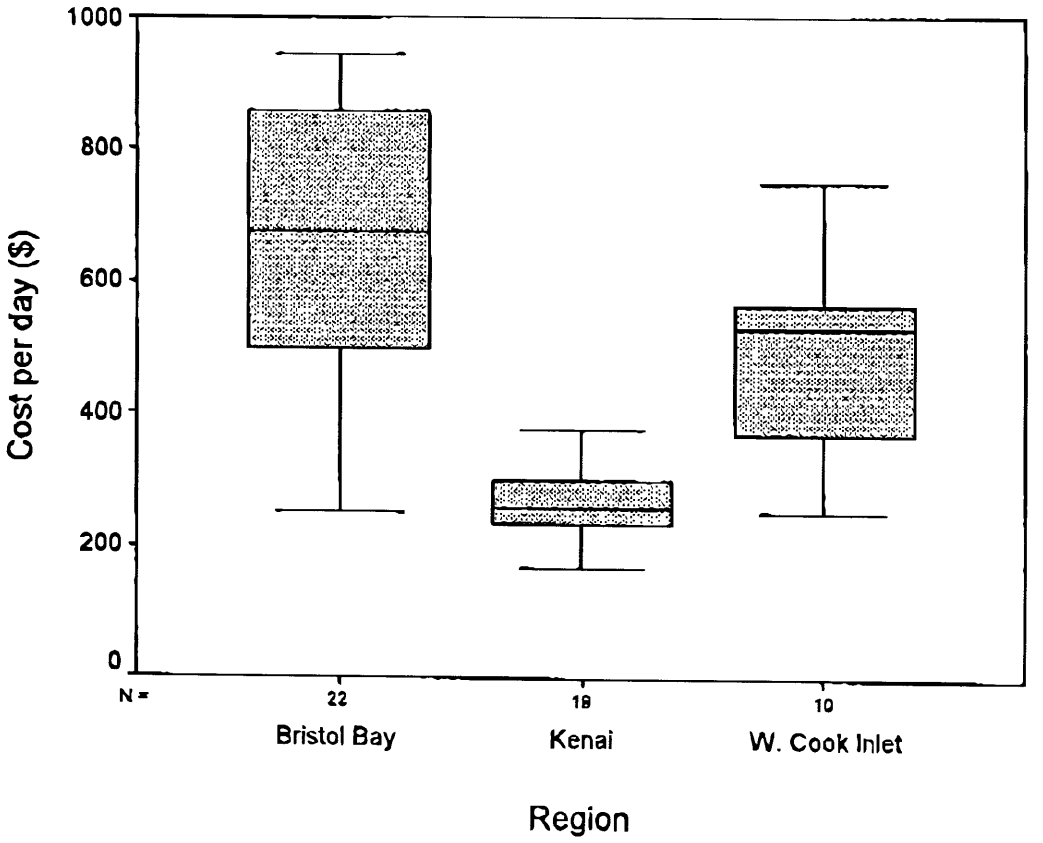
Flyout days by region for lodges with 7-day packages

Region * Flyout days Crosstabulation

			Flyout days					
			0	1	2	3	6	Total
Region	Bristol Bay	Count	4		1	3	10	18
		% within Region	22.2%		5.6%	16.7%	55.6%	100.0%
	Kenal	Count	10	3	1			14
		% within Region	71.4%	21.4%	7.1%			100.0%
	W. Cook Inlet	Count	7				1	8
		% within Region	87.5%				12.5%	100.0%
Total		Count	21	3	2	3	11	40
		% within Region	52.5%	7.5%	5.0%	7.5%	27.5%	100.0%

2. All lodges

Comparison of cost per day for all lodges on longest package



Report

Cost per day ($)

Region	N	Mean	Median	Std. Deviation	Minimum	Maximum
Bristol Bay	22	$673	$675	$204	$250	$943
Kenai	19	$272	$257	$59	$169	$375
W. Cook Inlet	10	$488	$530	$143	$250	$750
Total	51	$487	$433	$235	$169	$943

Regression of cost per day (based on longest package) on various attributes for all lodges (R^2=.880). Reference region is Bristol Bay.

Coefficients[a]

						95% Confidence Interval	
		Coefficient	Std. Error	t	P-value	Lower Bound	Upper Bound
	(Constant)	466.4	24.9	18.73	.000	416.3	516.6
	Flyouts per day	448.2	39.5	11.35	.000	368.8	527.6
	Kenai	-211.2	30.1	-7.03	.000	-271.7	-150.7
	W. Cook Inlet	-16.4	33.8	-.48	.630	-84.5	51.7

a. Dependent Variable: Cost per day ($)

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2459004	3	819667.916	128.855	.000[a]
	Residual	298973.7	47	6361.143		
	Total	2757977	50			

a. Predictors: (Constant), W. Cook Inlet, Flyouts per day, Kenai

b. Dependent Variable: Cost per day ($)

Transport included by region for all lodges

Region * Transport Included Crosstabulation

			Transport included		
			0	1	Total
Region	Bristol Bay	Count	1	21	22
		% within Region	4.5%	95.5%	100.0%
	Kenai	Count	15	3	18
		% within Region	83.3%	16.7%	100.0%
	W. Cook Inlet	Count		9	9
		% within Region		100.0%	100.0%
Total		Count	16	33	49
		% within Region	32.7%	67.3%	100.0%

Business	Website	Region	Type	Access	Transport
Alaska Sportmans Lodge	http://www.	Bristol Bay	Lodge	Anchorage	1
Rainbow Bay Resort Inc	http://www.	Bristol Bay	Lodge	Anchorage	1
Bear Bay Lodge	http://www.	Bristol Bay	Lodge	Dillingham	1
Bearclaw Ventures Inc	http://www.	Bristol Bay	Lodge	Dillingham	1
Fishing Bear Lodge	http://www.	Bristol Bay	Lodge	Dillingham	1
Mission creek Lodge LLC	http://www.	Bristol Bay	Lodge	Dillingham	1
Royal Coachman Lodge	http://www.	Bristol Bay	Lodge	Dillingham	1
Wood River Lodge	http://www.	Bristol Bay	Lodge	Dillingham	1
Kokwok Lodge	http://www.	Bristol Bay	Lodge	Dillingham	1
Royal Wolf Lodge	http://www.	Bristol Bay	Lodge	Ekwok	1
Copper River Lodge	http://www.	Bristol Bay	Lodge	Iguigig	1
Alagnak Lodge	http://www.	Bristol Bay	Lodge	Iliamna	1
Alaska Rainobow Lodge	http://www.	Bristol Bay	Lodge	King Salmon	1
Alaskas Enchanged Lake Lodge	http://www.	Bristol Bay	Lodge	King Salmon	1
Alaskas Naknek Anglers LLC	http://www.	Bristol Bay	Lodge	King Salmon	1
Bear Trail Lodge LLC	http://www.	Bristol Bay	Lodge	King Salmon	1
Fox Bay Lodge	http://www.	Bristol Bay	Lodge	King Salmon	1
Northern Knights Wilderness Lod	http://www.	Bristol Bay	Lodge	King Salmon	
Alaska Homestead Lodge	http://www.	Bristol Bay	Lodge	King Salmon	1
ALASKAN GAMEFISHER	http://www.	Kenai	Lodge	Kenai	1
HOOKSETTERS GUIDE SERVICE	http://www.	Kenai	Lodge	Kenai	0
Riddles Fishing Lodge	http://www.	Kenai	Lodge	Kenai	0
TOWER ROCK LODGE	http://www.	Kenai	Lodge	Kenai	0
Waba Outdoors	http://www.	Kenai	Lodge	Kenai	0
All Alaska Outdoor	http://www.	Kenai	Lodge	Kenai	0
Captain Blighs Beaver Creek Lod	http://www.	Kenai	Lodge	Soldotna	0
Jimmie Jack Fishing	http://www.	Kenai	Lodge	Soldotna	0
Kenai Riverbend Resort	http://www.	Kenai	Lodge	Soldotna	0
MARLOWS ON THE KENAI	http://www.	Kenai	Lodge	Soldotna	0
ORCA LODGE	http://www.	Kenai	Lodge	Soldotna	0
SOLDOTNA B AND B LODGE INC	http://www.	Kenai	Lodge	Soldotna	0
TIM BERGS ALASKAN FISHING ADVEN	http://www.	Kenai	Lodge	Soldotna	
ALASKAS DESHKA RIVER LODGE	http://www.	Kenai	Lodge	Soldotna	0
BEARTRACKS LODGE	http://www.	W. Cook Ir	Lodge	Anchorage	1
BENTALIT LODGE INC	http://www.	W. Cook Ir	Lodge	Anchorage	1
NORTHWOODS LODGE	http://www.	W. Cook Ir	Lodge	Anchorage	1
Riversong lodge	http://www.	W. Cook Ir	Lodge	Anchorage	1
Talahelm Lodge	http://www.	W. Cook Ir	Lodge	Anchorage	1
Talaview Lodge	http://www.	W. Cook Ir	Lodge	Anchorage	1
WILDERNESS PLACE LODGE	http://www.	W. Cook Ir	Lodge	Anchorage	1
	http://www.	W. Cook Ir	Lodge	Anchorage	1

Max guest	Fee	Days	Local day:	Flyout da	Info
16	$6,250	7	0	6	7d/7n, transport from Anc, flyouts,
	$5,500	7	0	6	7d/7n, transport to Anc, meals, lodging, flyou
	$5,750	7	0	6	lodging, meals, transportation, equipment, 2:
12	$3,290	7	0	0	transport, fish cleaning, packaging, lodging, r
8	$3,500	7	6	0	
	$6,200	7	0	6	Friday-Friday trips, all equip and meals, lodgi
8	$5,900	7	0	6	meals, lodging, trasnport to Dil, 6 flyouts,
16	$6,000	7	0	6	7d, transport to Dil, meals, lodging, equip
10	$3,000	7	6	0	transport to Ekwok, equipment, boats, 5 staff
12	$5,850	7	0	6	7d, transport to Ig, 6 flyouts, meals, lodging
	$3,500	7	6	0	7d, meals, lodging, transport to Ill, liscensing,
	$4,750	7	3	3	transport, lodging, meals, cleaning packaging
	$6,300	7	0	6	fri-fri, meals, lodging, daily flyouts, equipmen
12	$6,600	7	0	6	meals, loding, liscence, flying, guiding, equpi
8	$6,350	7	0	6	meals, lodging, boats, daily flyouts, equipmer
	$4,395	7	3	3	7d/6n, lodging, meals, 3 days local, 3 days fl
10	$4,699	7	3	3	7d/6n, transport to KS, meals equipment, lod
	$3,500	7	6	2	6d/7n, 3d local, 1d flyout, meals, lodging, eq
	$2,600	7	6	0	
	$1,625	7	6	0	
	$2,099	7	6	0	
	$1,450	7	6	0	
	$2,495	7	5	1	
	$1,999	7	6	0	breakfast/dinner not included
	$1,725	7	3	2	
	$1,475	7	6	0	
	$1,560	7	6	0	
54	$1,795	7	6	0	
	$2,100	7	5	1	
	$1,895	7	5	1	
	$1,799	7	6	0	days fishing are half days
	$1,995	7	6	0	
12	$2,395	7	6	0	6 nights
	$3,750	7	6	0	6 nights
16	$4,045	7	6	0	6 nights
	$3,960	7	6	0	
	$3,700	7	6	0	
6	$5,250	7	1	6	helicopter, 7 days of fishing
	$3,030	7	6	0	
	$3,722	7	6	0	

ts, equipment,
1 ratio; camps same as lodge
neals, land fees, boat use

lng, four planes, 2:1 ratio

, meals, laundry, fish prep

, equpiment,
ı of fish
ıt, fish preps, transport from KS
ment, transport to KS,
nt, fish prepping, transport to KS
yout
ging, guiding, flyouts(if spec), fish
ıipment, transport to KS, fish prep

Business	Website	Region	Type	Access	Transport	Max guest	Fee
Alaska Sportmans Lodge	http://www.	Bristol Bay	Lodge	Anchorage	1	16	$8,250
Guths Lodge at Iliamna Rive	http://www.	Bristol Bay	Lodge	Anchorage	1		$2,800
Rainbow Bay Resort Inc	http://www.	Bristol Bay	Lodge	Anchorage	1		$5,500
Aleknagik Island Lodge	http://www.	Bristol Bay	Lodge	Dillingham	1	8	$2,350
Bear Bay Lodge	http://www.	Bristol Bay	Lodge	Dillingham	1		$5,750
Bearclaw Ventures Inc	http://www.	Bristol Bay	Lodge	Dillingham	1	12	$3,290
Fishing Bear Lodge	http://www.	Bristol Bay	Lodge	Dillingham	1	8	$3,500
Mission creek Lodge LLC	http://www.	Bristol Bay	Lodge	Dillingham	1		$6,200
Nushagak Outfitters	http://www.	Bristol Bay	Lodge	Dillingham	0	21	$1,250
Nushagak Paradise Lodge L	http://www.	Bristol Bay	Lodge	Dillingham	1		$3,350
Royal Coachman Lodge	http://www.	Bristol Bay	Lodge	Dillingham	1	8	$5,900
Wood River Lodge	http://www.	Bristol Bay	Lodge	Dillingham	1	16	$6,000
Kokwok Lodge	http://www.	Bristol Bay	Lodge	Ekwok	1	10	$3,000
Royal Wolf Lodge	http://www.	Bristol Bay	Lodge	Iguigig	1	12	$5,850
Copper River Lodge	http://www.	Bristol Bay	Lodge	Iliamna	1		$3,500
Iliamna Lake Lodge Inc	http://www.	Bristol Bay	Lodge	Iliamna			
Rainbow King Lodge	http://www.	Bristol Bay	Lodge	Iliamna	1		
Alagnak Lodge	http://www.	Bristol Bay	Lodge	King Salm	1		$4,750
Alaska Rainobow Lodge	http://www.	Bristol Bay	Lodge	King Salm	1		$6,300
Alaskas Enchanged Lake Lo	http://www.	Bristol Bay	Lodge	King Salm	1	12	$6,600
Alaskas Naknek Anglers LL	http://www.	Bristol Bay	Lodge	King Salm	1	8	$6,350
Bear Trail Lodge LLC	http://www.	Bristol Bay	Lodge	King Salm	1		$4,395
Fox Bay Lodge	http://www.	Bristol Bay	Lodge	King Salm		10	$4,699
Northern Knights Wilderness	http://www.	Bristol Bay	Lodge	King Salm	1		$3,500
Chilaska	http://www.	Bristol Bay	Lodge				
Alaska Homestead Lodge	http://www.	Kenai	Lodge	Kenai	1		$2,600
Alaska Legacy Fishcamp	http://www.	Kenai	Lodge	Kenai	1		$375
ALASKAN GAMEFISHER	http://www.	Kenai	Lodge	Kenai	0		$1,625
DANS ALASKAN SPORT FI	http://www.	Kenai	Lodge	Kenai	0		$1,175
HOOKSETTERS GUIDE SE	http://www.	Kenai	Lodge	Kenai	0		$2,099
Limits R Us Guide Service	http://www.	Kenai	Lodge	Kenai	0	14	$675
Riddles Fishing Lodge	http://www.	Kenai	Lodge	Kenai	0		$1,450
ROD N REAL ALASKAN SP	http://www.	Kenai	Lodge	Kenai			$1,595
Three Mile Creek Lodge	http://www.	Kenai	Lodge	Kenai	1	9	$1,200
TOWER ROCK LODGE	http://www.	Kenai	Lodge	Kenai	0		$2,495
Waba Outdoors	http://www.	Kenai	Lodge	Kenai	0		$1,999
All Alaska Outdoor	http://www.	Kenai	Lodge	Soldotna	0		$1,725
Captain Blighs Beaver Creel	http://www.	Kenai	Lodge	Soldotna	0		$1,475
Jimmie Jack Fishing	http://www.	Kenai	Lodge	Soldotna	0		$1,560
Kenai Riverbend Resort	http://www.	Kenai	Lodge	Soldotna	0	54	$1,795
MARLOWS ON THE KENAI	http://www.	Kenai	Lodge	Soldotna	0		$2,100
ORCA LODGE	http://www.	Kenai	Lodge	Soldotna	0		$1,895
PATRICKS ALASKA FISHIN	http://www.	Kenai	Lodge	Soldotna	0		$2,095
SOLDOTNA B AND B LODC	http://www.	Kenai	Lodge	Soldotna			$1,799
TIM BERGS ALASKAN FISI	http://www.	Kenai	Lodge	Soldotna	0		$1,995
ALASKAS DESHKA RIVER	http://www.	W. Cook Ir	Lodge	Anchorage	1	12	$2,395
BEARTRACKS LODGE	http://www.	W. Cook Ir	Lodge	Anchorage	1		$3,750
BENTALIT LODGE INC	http://www.	W. Cook Ir	Lodge	Anchorage	1	16	$4,045
BIG DAVES ALASKAN BUS	http://www.	W. Cook Ir	Lodge	Anchorage	1		$1,500
NORTHWOODS LODGE	http://www.	W. Cook Ir	Lodge	Anchorage	1		$3,960

Days	Local day	Flyout da	Info
7	0	6	7d/7n, transport from Anc, flyouts,
5	5	0	
7	0	6	7d/7n, transport to Anc, meals, lodging, flyouts, equipment,
6	6	0	6d/5n, transport, meals, lodging, equipment, fish cleaning/storing
7	0	6	lodging, meals, transportation, equipment, 2:1 ratio; camps same as
7	0	0	transport, fish cleaning, packaging, lodging, meals, land fees, boa
7	6	0	
7	0	6	Friday-Friday trips, all equip and meals, lodging, four planes, 2:1
5	4	0	5d, meals, lodging,
6	5	0	6d/5n, transport to Dil, meals, lodging, tackle, fish prep,
7	0	6	meals, lodging, trasnport to Dil, 6 flyouts,
7	0	6	7d, transport to Dil, meals, lodging, equip
7	6	0	transport to Ekwok, equipment, boats, 5 staff, meals, laundry, fish
7	0	6	7d, transport to Ig, 6 flyouts, meals, lodging
7	6	0	7d, meals, lodging, transport to Ill, liscensing, equpiment,
7	3	3	transport, lodging, meals, cleaning packaging of fish
7	0	6	fri-fri, meals, lodging, daily flyouts, equipment, fish preps, tran
7	0	6	meals, loding, liscence, flying, guiding, equpiment, transport to K
7	0	6	meals, lodging, boats, daily flyouts, equipment, fish prepping, tra
7	3	3	7d/6n, lodging, meals, 3 days local, 3 days flyout
7	3	3	7d/6n, transport to KS, meals equipment, lodging, guiding, flyouts(
7	6	2	6d/7n, 3d local, 1d flyout, meals, lodging, equipment, transport to
7	6	0	
1	1	0	
7	6	0	
5	5	0	
7	6	0	
4	3	0	
7	6	0	
5	3	0	
7	5	1	
7	6	0	breakfast/dinner not included
7	3	2	
7	6	0	
7	6	0	
7	6	0	
7	5	1	
7	5	1	
6	5	0	
7	6	0	days fishing are half days
7	6	0	
7	6	0	6 nights
7	6	0	6 nights
7	6	0	6 nights
6	6	0	5 nights
7	6	0	

Riversong lodge	http://www. W. Cook Ir Lodge	Anchorage	1		$3,700
Talaheim Lodge	http://www. W. Cook Ir Lodge	Anchorage	1	6	$5,250
Talaview Lodge	http://www. W. Cook Ir Lodge	Anchorage	1		$3,030
WILDERNESS PLACE LOD	http://www. W. Cook Ir Lodge	Anchorage	1		$3,722
Deshka Silver-King Lodge	http://www. W. Cook Ir Lodge			15	$370

7	6	0
7	1	6 helicopter, 7 days fishing
7	6	0
7	6	0
1	1	0